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Real Estate Economists, Appraisers and Counselors

CONSTRUCTION ACTIVITY - ITS MEASUREMENT AND FLUCTUATIONS

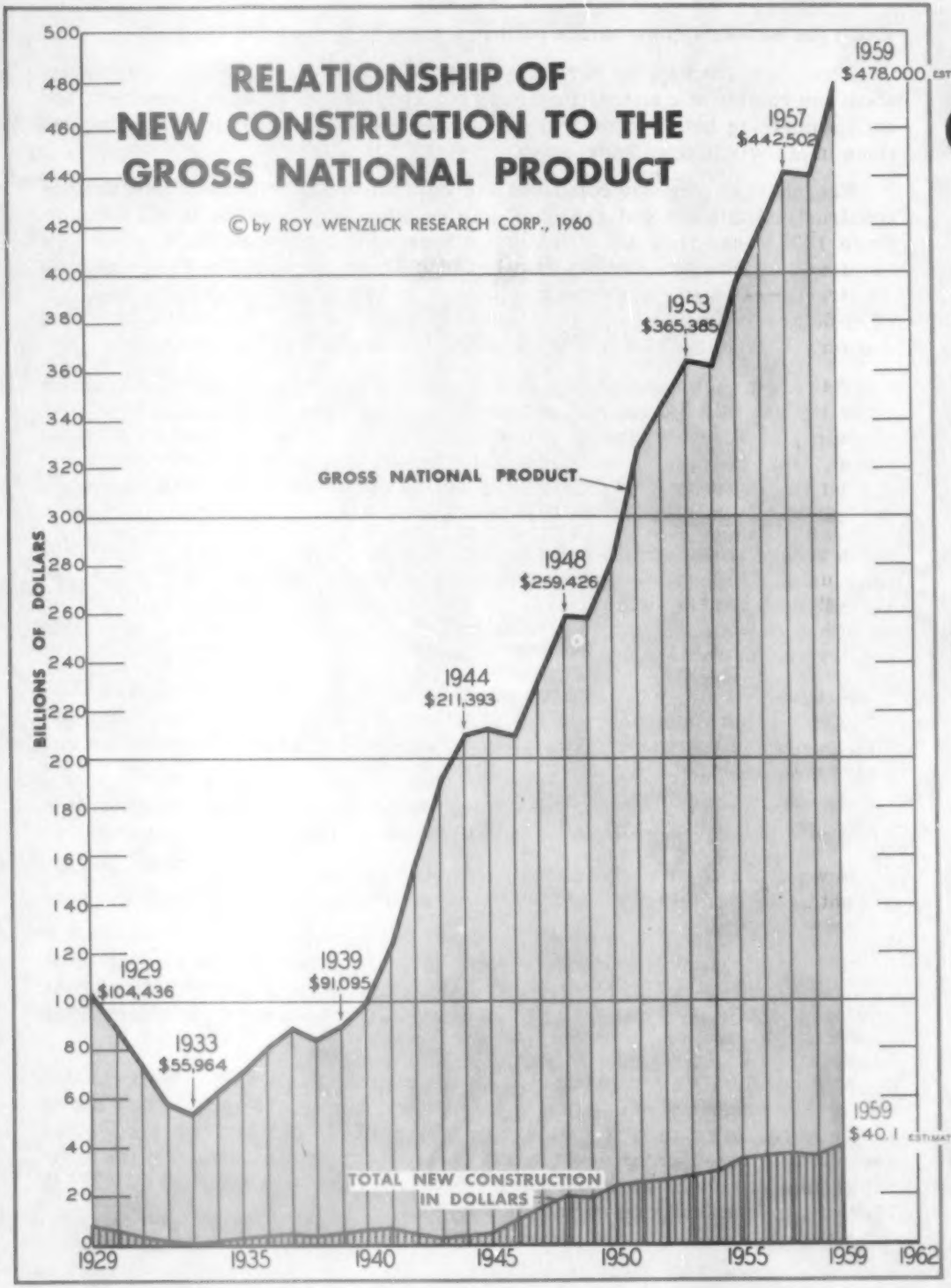
IN making decisions we want as many facts as possible. Mortgage bankers, builders, and their suppliers are interested in the volume of construction and its fluctuations in order to plan their activities for the next 6 to 12 months.

Two measures of total new construction are the current dollar value and the value in dollars of constant purchasing power. New construction includes not only new building, but highway, bridge, and other similar construction activity. The total volume, in current dollars, of public and private new construction was $54.3 billion in 1959. The total volume in 1947-49 dollars was $38.4 billion in 1959.

Three measures of residential construction are the current dollar value, the value in dollars of constant purchasing power, and the number of nonfarm dwelling units started. The total value in current dollars of residential building (nonfarm), including alterations and additions, was $22.4 billion. The total value in 1947-49 dollars was $16.2 billion. There were 1,377,000 nonfarm dwelling units started in 1959. Starts increased 14 percent from 1958, the dollar value increased 24 percent, and the constant dollar value increased 20 percent. Which is the real measure of the change in construction activity? All that we can say is that residential construction activity increased 14 to 24 percent.

The current dollar value does reflect the changes in the purchasing power of the dollar. Thus, there can be an increase in the dollar volume of construction when there is no change in the physical volume. If, however, we adjust the current dollar volume of new construction for changes in the purchasing power of the dollar, there may still be large unknown errors, due to our inability to account for all the modernization and alteration done by do-it-yourselfers and by repair and maintenance men of nonconstruction companies.

The number of dwelling units started may not be a better measure than the dollar value of new residential building. Although there has been an increase in the number of starts since 1925, the kind and value of houses has changed a great deal. Between 1950 and 1956 the Census discovered that the Bureau of Labor Statistics had not counted 1.5 million new houses, which had been built according to Census inventory figures. The Census is now responsible for these data, and is trying to improve them by new aerial survey methods from


RELATIONSHIP OF
NEW CONSTRUCTION TO THE
GROSS NATIONAL PRODUCT
© by ROY WENZLICK RESEARCH CORP., 1960
BILLIONS OF DOLLARS
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1929
$104,436
1933
$55,964
1939
$91,095
1944
$211,393
1948
$259,426
1953
$365,385
1957
$442,502
1959
$478,000 ESTIMATED
GROSS NATIONAL PRODUCT
TOTAL NEW CONSTRUCTION
IN DOLLARS
1959
$40.1 ESTIMATED
1929
1935
1940
1945
1950
1955
1959
1962

which the number of new homes built in a given period can be verified.

Thus, we find that we have imperfect measures to guide our decisions about the volume of construction activity. They are all we have, however, and until something better comes along, let us use these to analyze the fluctuations in activity that we know exist.

The chart on page 50 compares the current dollar volume of new private construction plus oil and gas well drilling with the Gross National Product. Since 1933 Gross National Product has increased rather steadily, while new construction shows more fluctuations. In 1943-44 and 1933-34-35 new private construction was only 1 to 3 percent of the Gross National Product. In 1929 and 1950-59 new construction activity has been a much higher proportion of annual economic activity, rising to 7 and 8 percent of Gross National Product.

Total new public and private construction has had three peaks and valleys since 1920. Although the current dollar value of new public and private construction is the highest that it has ever been (three times as great as previous highs), when the dollars are adjusted for changes in the purchasing power and population, the constant dollar volume per capita of new construction is only 8 percent higher than that of the 1926 peak.

In order to see the difference in fluctuations of different types of construction, using different measures, we have charted the current dollar value, the 1947-49 dollar value, and the 1947-49 dollar value per capita for private construction, industrial, office-warehouse-loft, private commercial, and farm construction on pages 53 through 57.

New private industrial construction is more volatile than total new construction. There are more peaks and valleys and wider fluctuations. In addition, per capita public industrial construction has been charted to show the war plant construction activity.

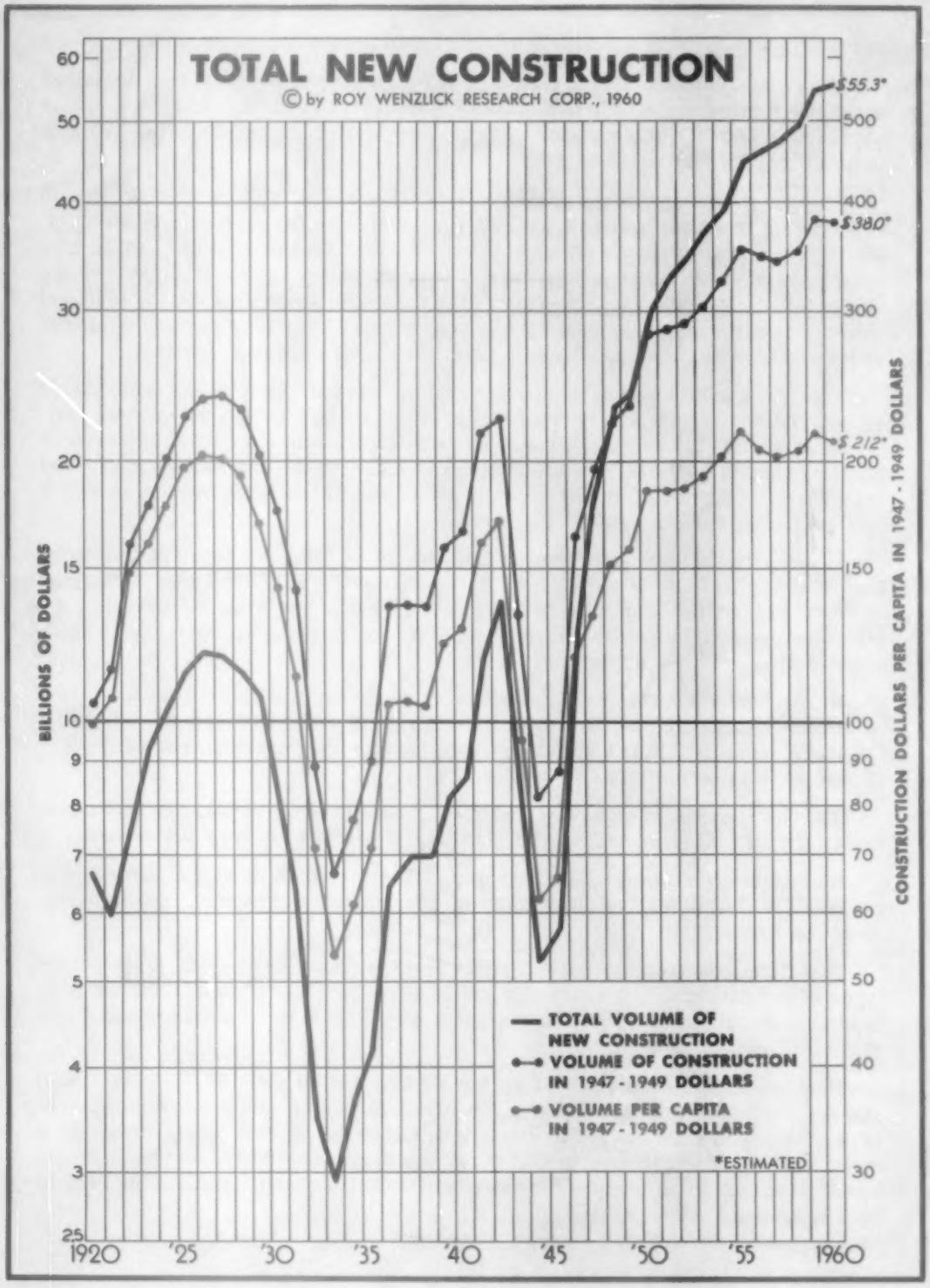
The fluctuations in office, warehouse, and loft construction are similar to those of total new construction, although the low of 1944 is very low indeed.

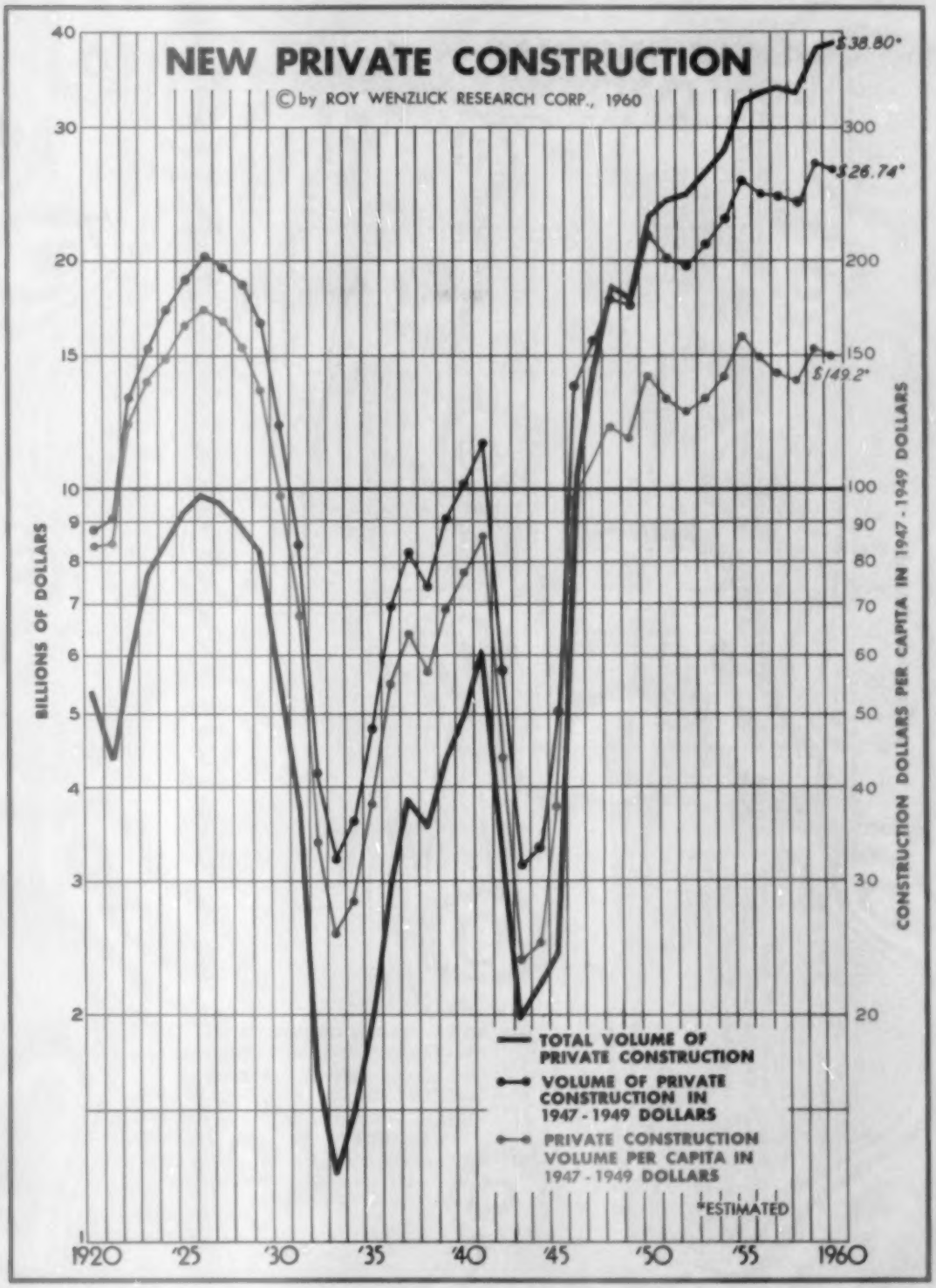
New private commercial construction activity, which includes stores, restaurants, and garages, is about the same as office, warehouse, and loft construction activity.

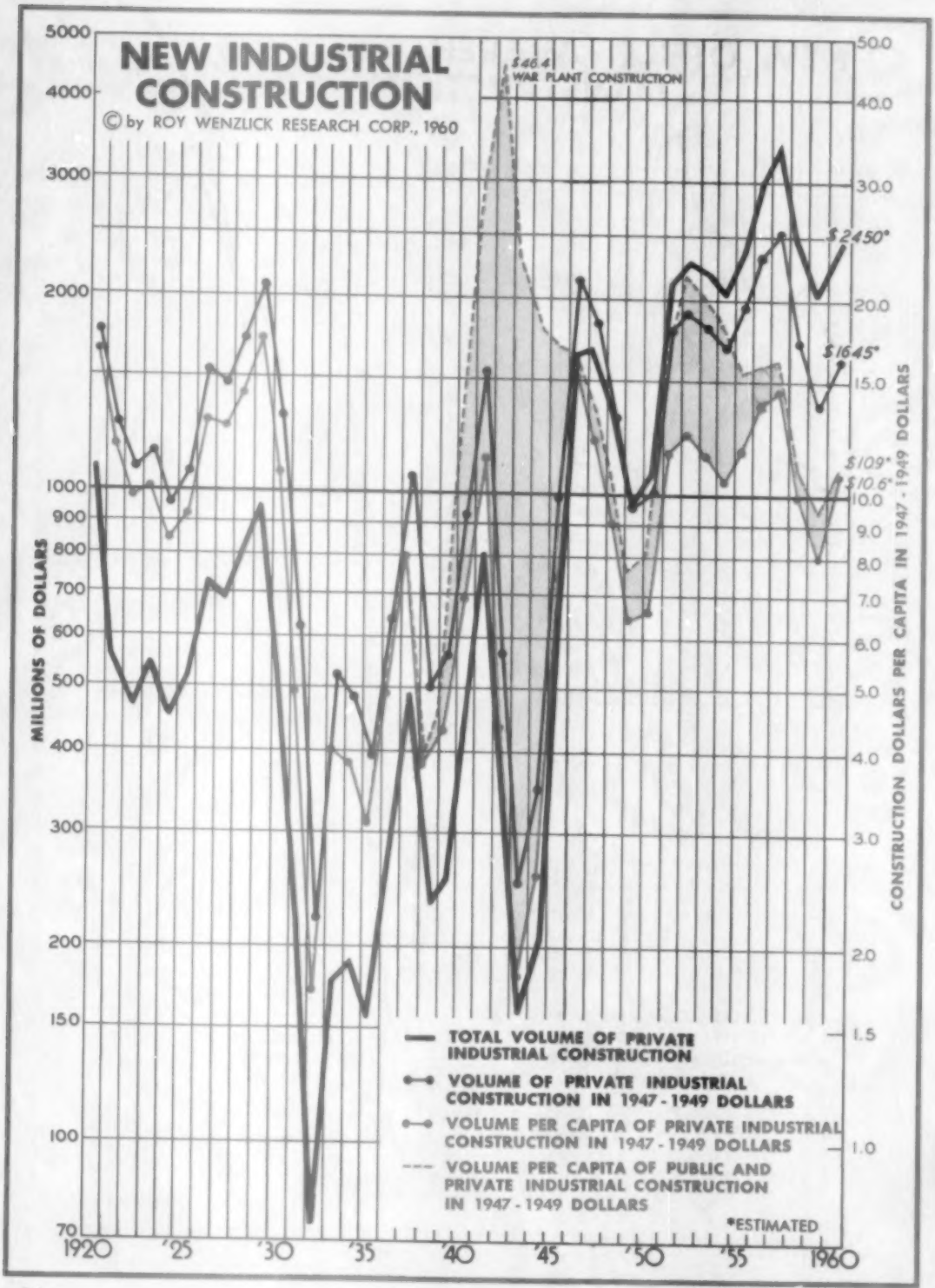
New farm construction does not show the low of the 1940's, as do the other types of construction. It reached a low of about $37.5 million in 1932 and rose to almost $2 billion in 1953. Since that time it has been declining gradually to $1,750 million in 1959.

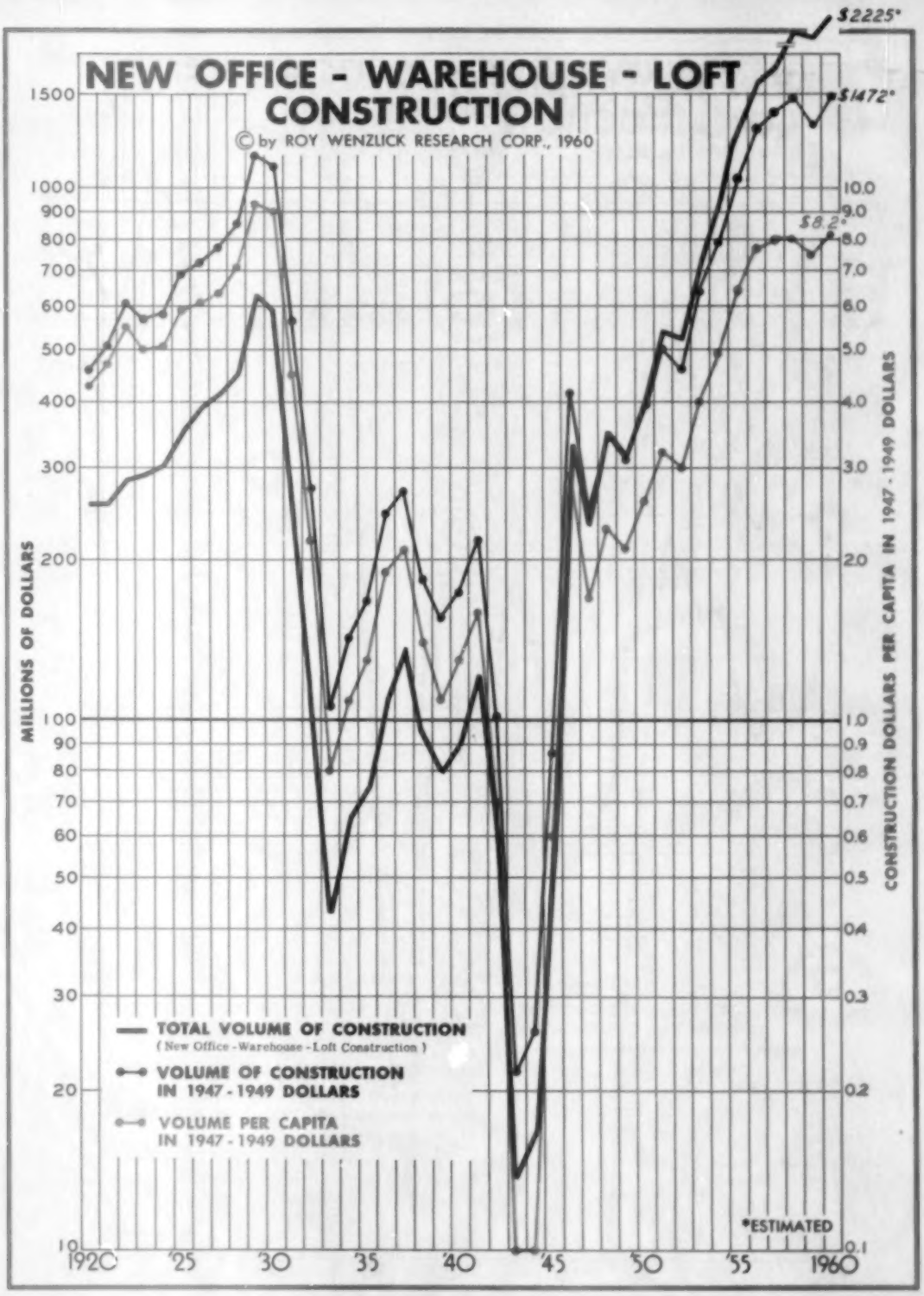
New nonfarm residential starts are charted on page 58. We have also charted the number of starts per 1,000 nonfarm families to see how new starts have changed in relation to the number of families. The striking thing about new nonfarm housing starts is that they have declined with respect to the number of families from about 47.0 units per 1,000 nonfarm families in 1926 to 29.9 units per 1,000 nonfarm families in 1959.

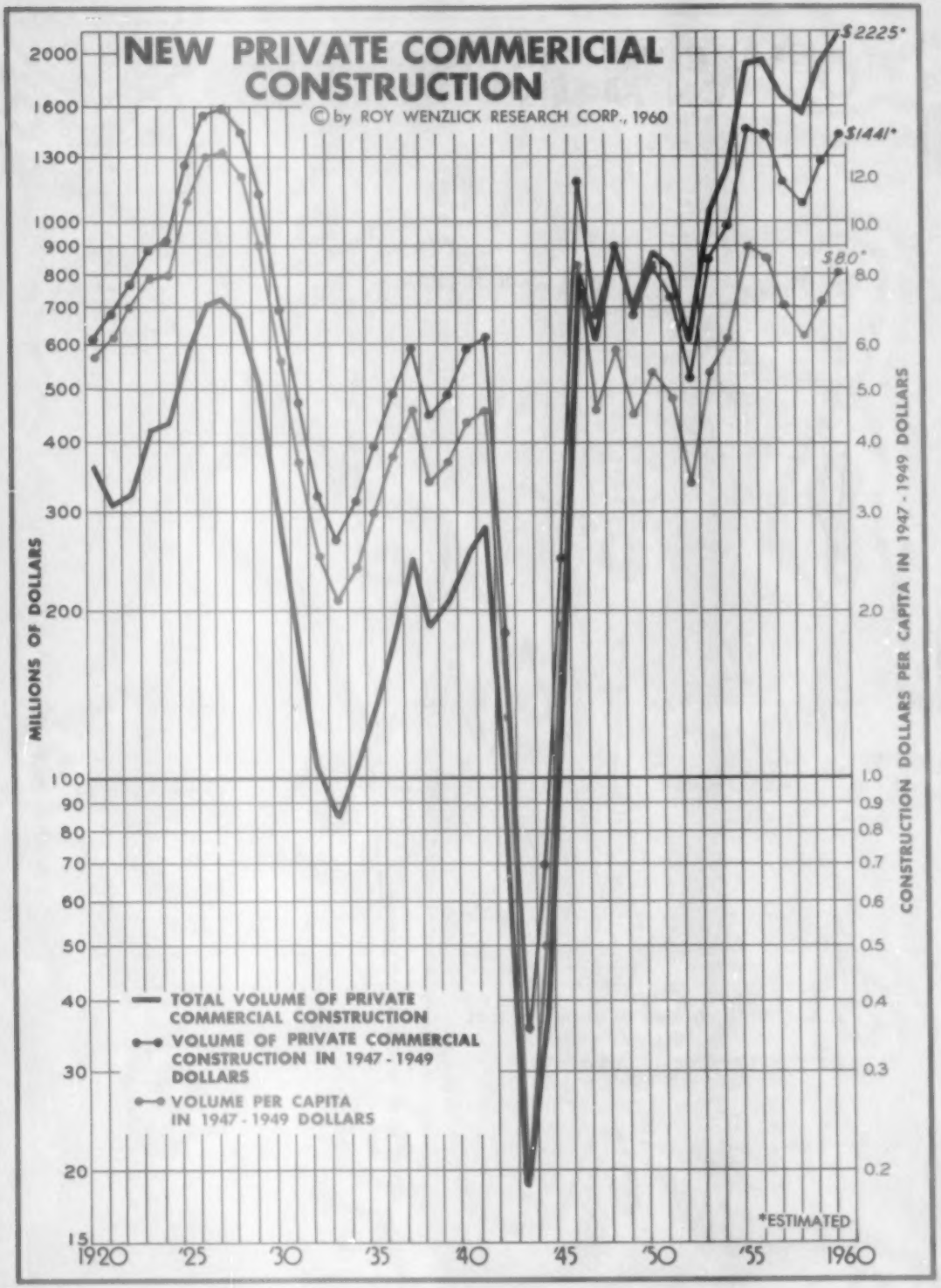
(cont. on page 60)

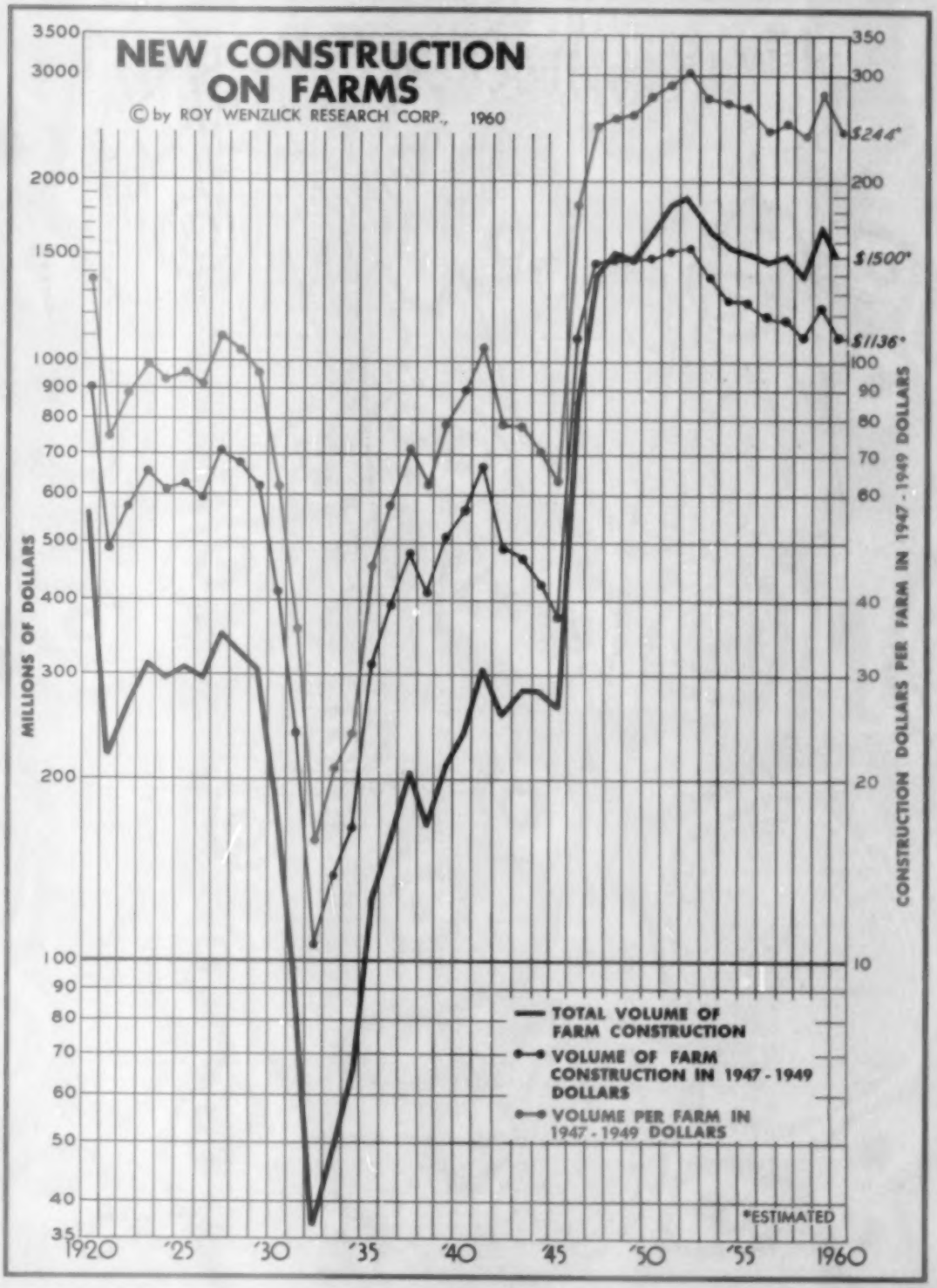

TOTAL NEW CONSTRUCTION
© by ROY WENZLICK RESEARCH CORP., 1960
$55.3*
$380*
$212*
BILLIONS OF DOLLARS
CONSTRUCTION DOLLARS PER CAPITA IN 1947-1949 DOLLARS
60
50
40
30
20
15
10
9
8
7
6
5
4
3
25
500
400
300
200
150
100
90
80
70
60
50
40
30
1920
'25
'30
'35
'40
'45
'50
'55
1960
TOTAL VOLUME OF NEW CONSTRUCTION
VOLUME OF CONSTRUCTION IN 1947-1949 DOLLARS
VOLUME PER CAPITA IN 1947-1949 DOLLARS
*ESTIMATED

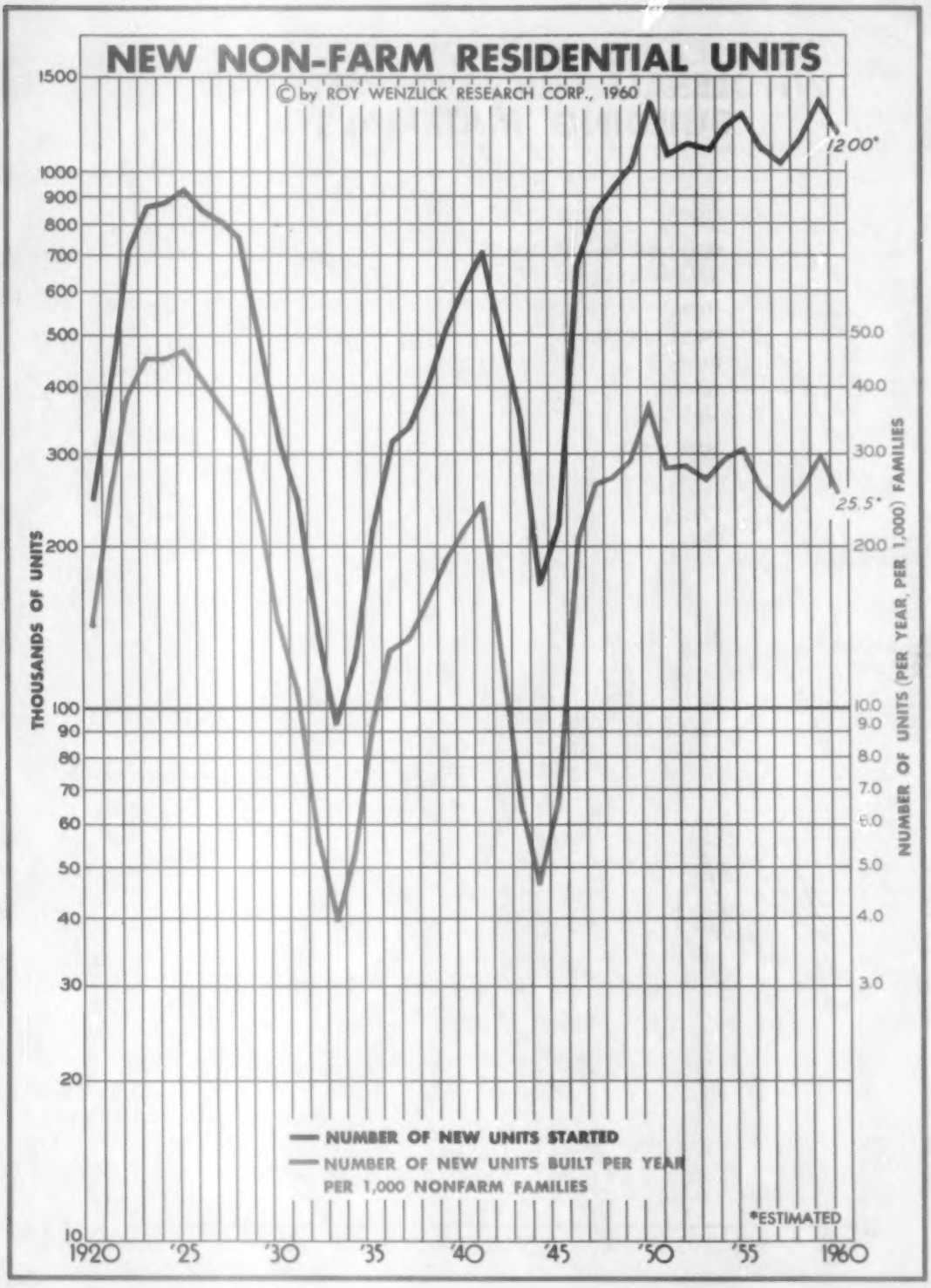

NEW PRIVATE CONSTRUCTION
©by ROY WENZLICK RESEARCH CORP., 1960
BILLIONS OF DOLLARS
CONSTRUCTION DOLLARS PER CAPITA IN 1947 - 1949 DOLLARS
$38.80*
$26.74*
$149.2*
TOTAL VOLUME OF PRIVATE CONSTRUCTION
VOLUME OF PRIVATE CONSTRUCTION IN 1947 - 1949 DOLLARS
PRIVATE CONSTRUCTION VOLUME PER CAPITA IN 1947 - 1949 DOLLARS
*ESTIMATED
1920
'25
'30
'35
'40
'45
'50
'55
1960

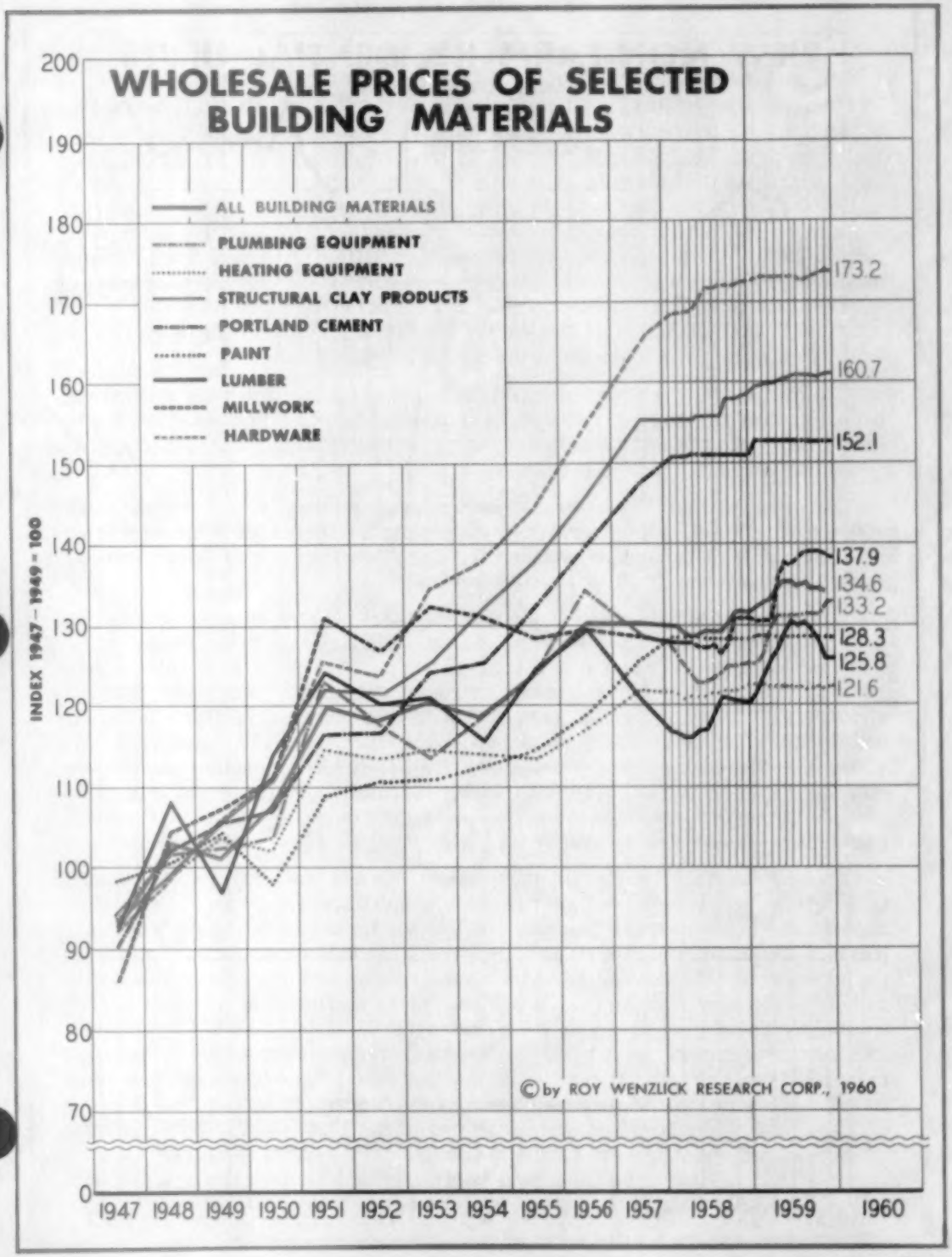

NEW INDUSTRIAL CONSTRUCTION
© by ROY WENZLICK RESEARCH CORP., 1960
$46.4 WAR PLANT CONSTRUCTION
$24.50*
$16.45*
$10.9*
$10.6*
MILLIONS OF DOLLARS
CONSTRUCTION DOLLARS PER CAPITA IN 1947-1949 DOLLARS
5000
4000
3000
2000
1000
900
800
700
600
500
400
300
200
150
100
70
50.0
40.0
30.0
20.0
15.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.5
1.0
1920
'25
'30
'35
'40
'45
'50
'55
1960
TOTAL VOLUME OF PRIVATE INDUSTRIAL CONSTRUCTION
VOLUME OF PRIVATE INDUSTRIAL CONSTRUCTION IN 1947-1949 DOLLARS
VOLUME PER CAPITA OF PRIVATE INDUSTRIAL CONSTRUCTION IN 1947-1949 DOLLARS
VOLUME PER CAPITA OF PUBLIC AND PRIVATE INDUSTRIAL CONSTRUCTION IN 1947-1949 DOLLARS
*ESTIMATED


NEW OFFICE - WAREHOUSE - LOFT CONSTRUCTION
© by ROY WENZLICK RESEARCH CORP., 1960
$2225*
$1472*
$82*
MILLIONS OF DOLLARS
CONSTRUCTION DOLLARS PER CAPITA IN 1947-1949 DOLLARS
1500
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
1920
'25
'30
'35
'40
'45
'50
'55
1960
TOTAL VOLUME OF CONSTRUCTION
(New Office - Warehouse - Loft Construction)
VOLUME OF CONSTRUCTION IN 1947-1949 DOLLARS
VOLUME PER CAPITA IN 1947-1949 DOLLARS
*ESTIMATED


NEW PRIVATE COMMERICIAL CONSTRUCTION
© by ROY WENZLICK RESEARCH CORP., 1960
MILLIONS OF DOLLARS
CONSTRUCTION DOLLARS PER CAPITA IN 1947 - 1949 DOLLARS
$2225*
$1441*
$80*
TOTAL VOLUME OF PRIVATE COMMERCIAL CONSTRUCTION
VOLUME OF PRIVATE COMMERCIAL CONSTRUCTION IN 1947 - 1949 DOLLARS
VOLUME PER CAPITA IN 1947 - 1949 DOLLARS
*ESTIMATED
2000
1600
1300
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
15
12.0
10.0
8.0
6.0
5.0
4.0
3.0
2.0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
1920
'25
'30
'35
'40
'45
'50
'55
1960


NEW CONSTRUCTION ON FARMS
© by ROY WENZLICK RESEARCH CORP., 1960
MILLIONS OF DOLLARS
CONSTRUCTION DOLLARS PER FARM IN 1947-1949 DOLLARS
$244*
$1500*
$1136*
TOTAL VOLUME OF FARM CONSTRUCTION
VOLUME OF FARM CONSTRUCTION IN 1947-1949 DOLLARS
VOLUME PER FARM IN 1947-1949 DOLLARS
*ESTIMATED
1920
'25
'30
'35
'40
'45
'50
'55
1960


NEW NON-FARM RESIDENTIAL UNITS
© by ROY WENZLICK RESEARCH CORP., 1960
1200*
25.5*
THOUSANDS OF UNITS
NUMBER OF UNITS (PER YEAR, PER 1,000) FAMILIES
1500
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
50.0
40.0
30.0
20.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
NUMBER OF NEW UNITS STARTED
NUMBER OF NEW UNITS BUILT PER YEAR PER 1,000 NONFARM FAMILIES
*ESTIMATED
1920
'25
'30
'35
'40
'45
'50
'55
1960


WHOLESALE PRICES OF SELECTED BUILDING MATERIALS
ALL BUILDING MATERIALS
PLUMBING EQUIPMENT
HEATING EQUIPMENT
STRUCTURAL CLAY PRODUCTS
PORTLAND CEMENT
PAINT
LUMBER
MILLWORK
HARDWARE
INDEX 1947 - 1949 = 100
200
190
180
170
160
150
140
130
120
110
100
90
80
70
0
1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960
173.2
160.7
152.1
137.9
134.6
133.2
128.3
125.8
121.6
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(cont. from page 51)

What is the nature of construction activity that causes these violent swings? The most important fact is that each new year's addition is a small percentage of the total stock available for use. In 1956, total dwelling units were estimated to be 55,342,000 units by the National Housing Inventory. If we estimate 6 million of these to be farm dwelling units, there were about 49 million nonfarm dwelling units in 1956. In 1956, only 1,118,000 new dwelling units were started, or about 2 percent of the total stock of dwelling units occupied in 1956. Thus, any changes in the demand for occupying dwelling units have a greater effect on new construction of units. If the economy is overbuilt with respect to demand, new construction is cut by more than 50 percent, as in 1933, even though total demand for housing has not fallen by that percentage. This same principle applies to the other types of construction.

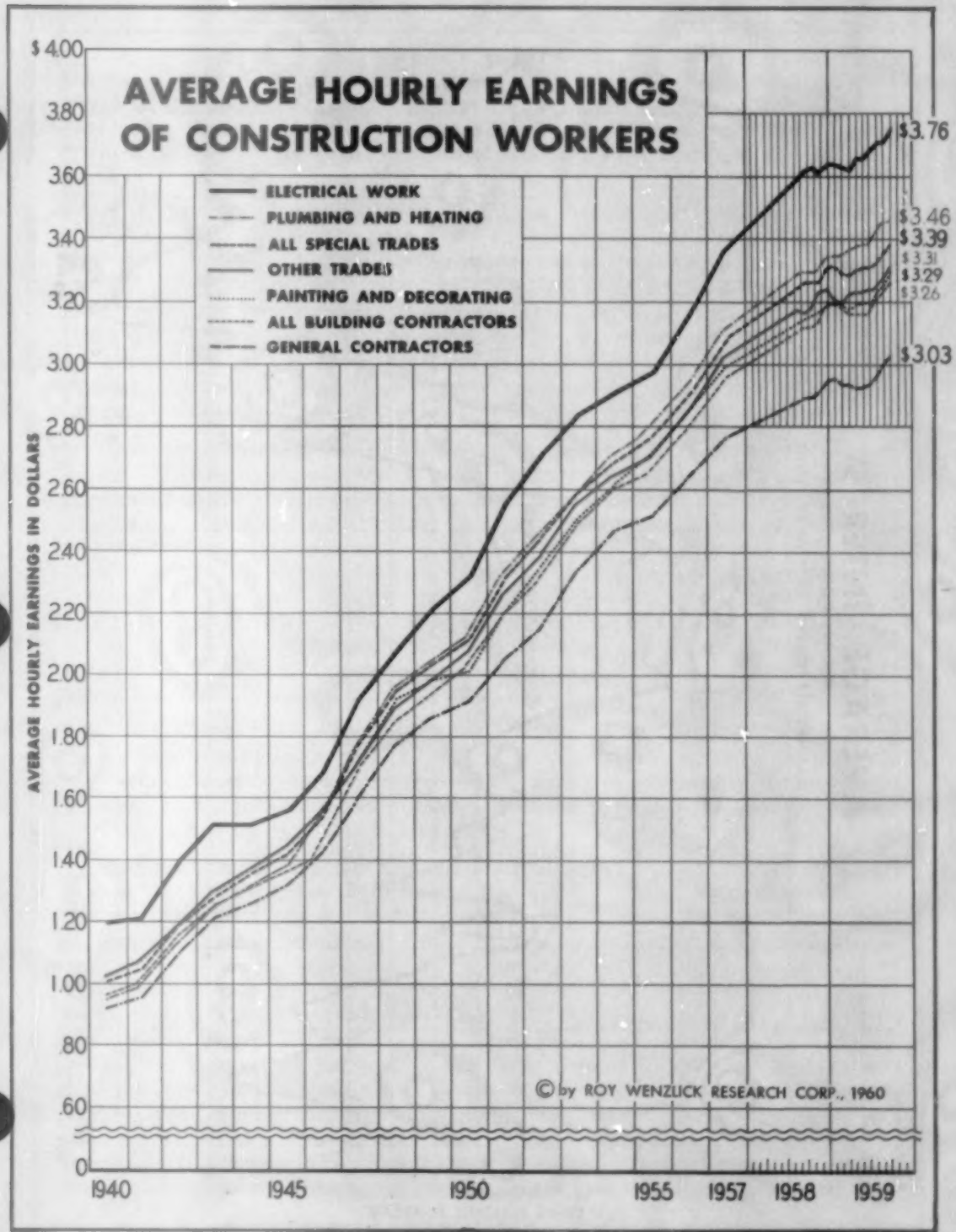
The fact that structures are fixed in location means that construction depends not only on changes in the total number of families in the United States, but on their location. This includes stores, office buildings, and plants, which follow the concentrations of population.

The important factors in the demand for new construction are income, population, migration, and general business growth. Increased incomes will encourage people to move into new houses, even though there is no additional increase in population or the number of families.

Migration of people causes demand for more housing in a new area. The map on page 64 shows the percentage change in population in the United States from 1950 to 1959 by States. New building should be concentrated in the fastest growing States. These States were Arizona, California, Delaware, Florida, and Nevada. It is too bad that part of this demand could not be filled by moving houses from the areas declining in population, Arkansas, Vermont, and West Virginia. The population for all of the States, excluding Alaska and Hawaii, increased 17 percent from 1950 to 1959. Population increase and migration, along with the increase in income, have brought the continuing large construction volume for the years 1950-59.

Another important factor in the demand for new construction, especially commercial and industrial construction, is the financing cost. The chart on page 62 shows the average interest rate on mortgages in St. Louis and Manhattan. The St. Louis rate tends to represent the rate on single-family-dwelling mortgages; the Manhattan rate tends to represent the rate on apartment and office building mortgages. It will be noticed that they tend to rise and fall together. Currently, they are 5.71 percent in St. Louis and 5.72 percent in Manhattan. Although we say that tight money restricts construction and easy money encourages construction, over the long run the mortgage interest rates have been low or declining during years of low construction activity, and high or rising during the good construction years of the 1920's and 1950's. We too often associate tight money with high interest rates. This is not necessarily true. Money is tight when the cost of borrowing is less than the rate of return

(cont. on page 63)


AVERAGE HOURLY EARNINGS OF CONSTRUCTION WORKERS
ELECTRICAL WORK
PLUMBING AND HEATING
ALL SPECIAL TRADES
OTHER TRADES
PAINTING AND DECORATING
ALL BUILDING CONTRACTORS
GENERAL CONTRACTORS
AVERAGE HOURLY EARNINGS IN DOLLARS
$4.00
3.80
3.60
3.40
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
.80
.60
0
1940
1945
1950
1955
1957
1958
1959
$3.76
$3.46
$3.39
$3.31
$3.29
$3.26
$3.03
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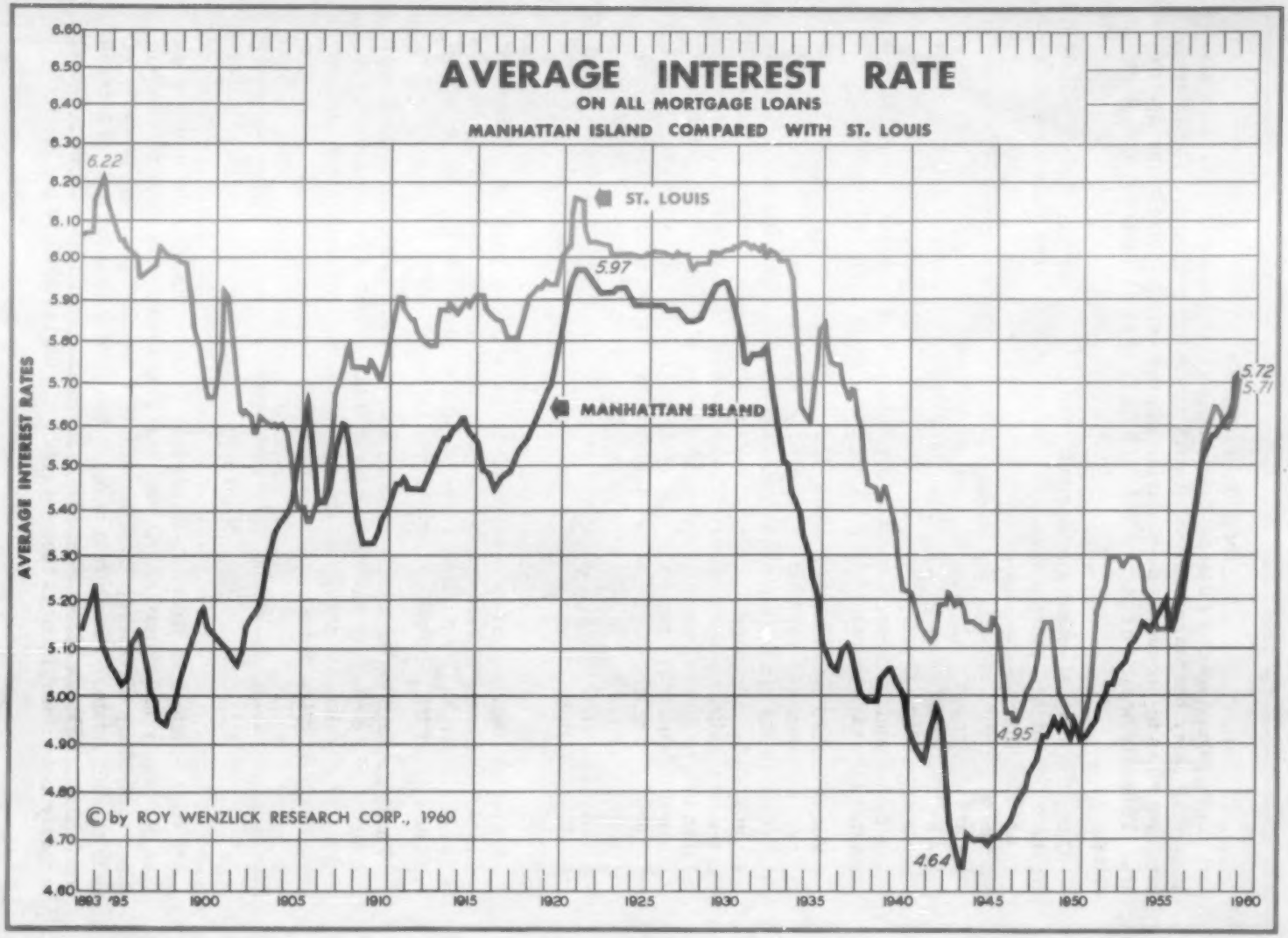
AVERAGE INTEREST RATE
ON ALL MORTGAGE LOANS
MANHATTAN ISLAND COMPARED WITH ST. LOUIS
AVERAGE INTEREST RATES
ST. LOUIS
MANHATTAN ISLAND
6.22
5.97
5.72
5.71
4.95
4.64
6.60
6.50
6.40
6.30
6.20
6.10
6.00
5.90
5.80
5.70
5.60
5.50
5.40
5.30
5.20
5.10
5.00
4.90
4.80
4.70
4.60
1893 '95
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
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(cont. from page 60)

that can be earned by borrowing funds and putting them to profitable use. There are many borrowers and not enough funds to go around. The interest rate then rises to encourage more saving and discourage some of the borrowers. This may occur during periods of high interest rates or low interest rates.

Cost, the price of existing structures, and productivity are factors affecting the supply of new construction. The supply of structures falls when buildings are demolished, due to a catastrophe, obsolescence, or new highway building and urban renewal. It has been estimated that about 400,000 dwelling units are destroyed each year in these ways. One of the factors increasing costs and thus tending to be a restrictive influence on new construction is the increasing average hourly earnings, which we have charted on page 61. These wages do not include those of nonbuilding construction workers. It will be noticed that they have increased from 213 to 237 percent from 1940 to 1959.

Much is heard about featherbedding and inefficiency in the construction industry. Efficiency is very hard to measure, since it should be the actual output divided by the maximum output possible with the same combination of labor, materials, and capital. Thus, merely dividing the number of laborers into the total output is inaccurate. There may be less labor used per unit output than before and the production will be just as efficient. Some instances of increased productivity, however, can be cited from the Architectural Forum, May 1958: 1. More use of capital equipment has kept the dollar cost of excavation from increasing in spite of rising labor costs; 2. Metal floors have speeded up construction since they can be put in place in any weather. They also allow a weight-saving that cuts down on the amount of structural steel needed.

Wholesale building material prices are charted on page 59. This chart shows that hardware and lumber prices have increased the most. The raw material of lumber has been a free resource in the past, but the cost of lumber must now cover its profitable reproduction.

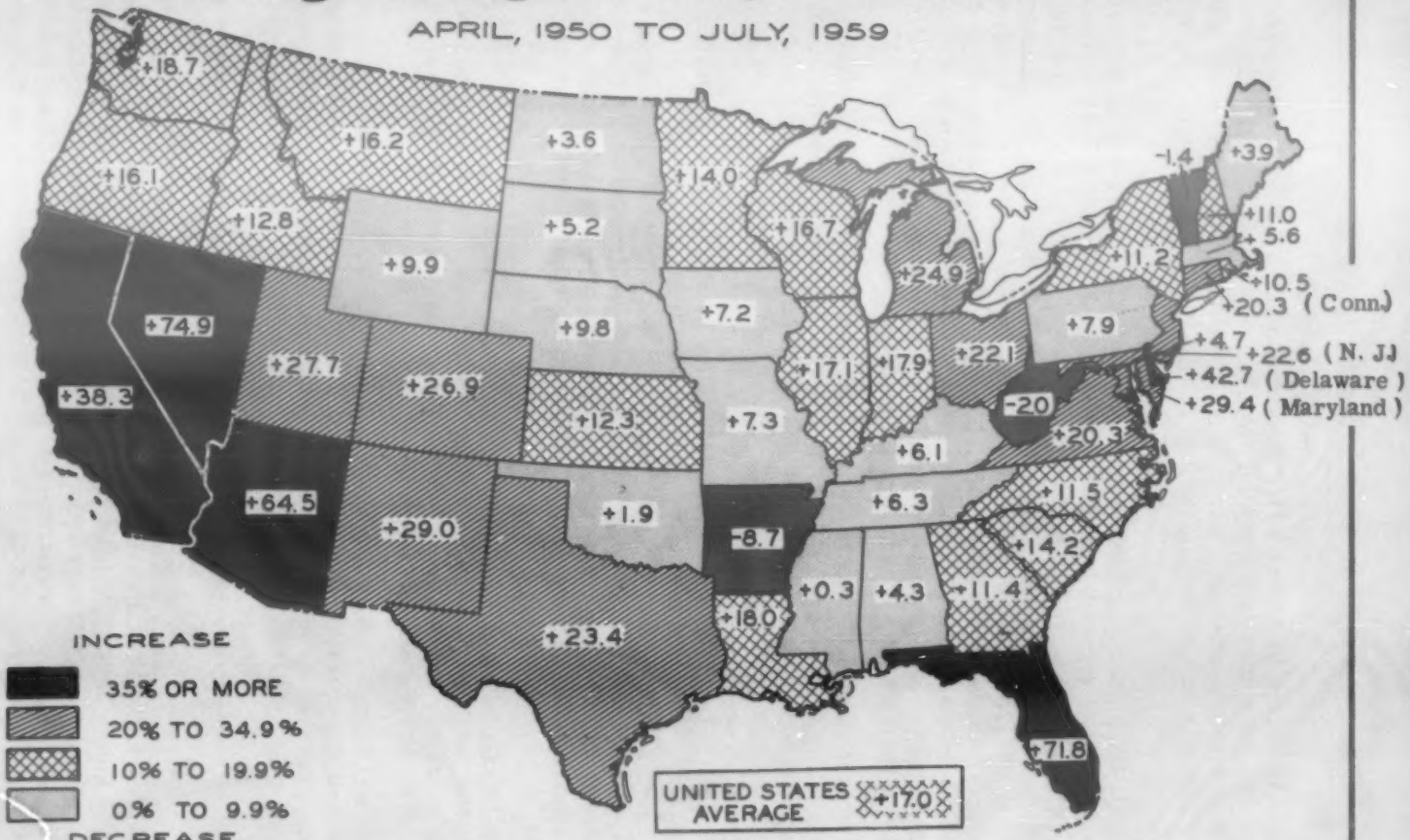
Thus, although rising labor costs and material prices have led to increases in construction costs, we have experienced a large volume of construction activity. The reason for this has been increasing income, population, and migration in the United States.

ERRATA

In Real Estate Tax Bulletin, Number 48, Volume XXVIII, the average tax load per family in Hartford and Omaha was overstated. The base assessment data received by our survey from these cities included personal property as well as real estate. The correct data for Hartford show a tax load of $356.89 per family in 1958 and $356.26 in 1959. In Omaha, elimination of the personal property assessment reduces the real estate tax load to $273.73 per family.

Percentage Change In Population By States

APRIL, 1950 TO JULY, 1959



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